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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/511,734

10/18/2004

Davor Protic

046972-0102

2536

22428 7590 01/12/2011
FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
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EXAMINER

LEE, SHUN K

ART UNIT

PAPER NUMBER

2884

MAIL DATE

DELIVERY MODE

01/12/2011

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/511,734	PROTIC ET AL.	
	Examiner	Art Unit	
	Shun Lee	2884	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 September 2010 and 15 December 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-7 and 9-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-7 and 9-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 January 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20100907</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

National Stage Application

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114 was filed in this application after a decision by the Board of Patent Appeals and Interferences, but before the filing of a Notice of Appeal to the Court of Appeals for the Federal Circuit or the commencement of a civil action. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 15 December 2010 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1, 3-7, and 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamacher *et al.* (Performance of position -sensitive germanium detectors in nuclear reaction experiments, Nuclear Instruments & Methods in Physics Research, Vol. A295, no. 1-2 (October 1990), pp. 128-132) in view of Luke *et al.* (Amorphous Ge bipolar blocking contacts on Ge detectors, IEEE Transactions on Nuclear Science, Vol. 39, no. 4 (August 1992), pp. 590-594).

In regard to claims **1**, **3-5**, and **7**, Hamacher *et al.* disclose (Fig. 1) a camera with a position-sensitive detector for measuring charged particles comprising a crystalline substrate formed of semiconductor material (*e.g.*, high-purity germanium) and a surface region, the surface region comprising blocking contacts (formed by boron ion implantation) with a structured, metallic layer comprises Al (aluminum) disposed above it, wherein the structure of the metallic layer continues through the blocking contacts and at least partially into the crystalline substrate (see “transferring the structure into the semiconductor material by etching” in Fig. 1). The detector of Hamacher *et al.* lacks that each of the blocking contacts comprise a germanium (or silicon) amorphous layer disposed on the crystalline structure, wherein the amorphous layer is not doped. However, Luke *et al.* teach (section 1) to apply an undoped germanium amorphous layer (that forms good bipolar blocking contacts) on a p- or n-doped germanium crystalline semiconductor structure as an equivalent alternative to a boron doped layer. It should be noted that “when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a

predictable results”. *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 at 416, 82 USPQ2d 1385 (2007) at 1395 (citing *United States v. Adams*, 383 U.S. 39, 40 [148 USPQ 479] (1966)). See MPEP § 2143. In this case, one of ordinary skill in the art could have substituted an amorphous (germanium or silicon) layer for the boron doped layer in each of the plurality of electrodes of Hamacher *et al.* and the results of the substitution would have been predictable. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide an undoped amorphous (germanium or silicon) layer instead of the boron doped layer for each of the plurality of electrodes of Hamacher *et al.*

In regard to claim **6** which is dependent on claim 1, Hamacher *et al.* also disclose (section 3.1, last paragraph on the right column on pg. 129) that the structure is formed from segments having a mutual spacing of less than 100 μm .

In regard to claim **9** which is dependent on claim 1, Hamacher *et al.* in view of Luke *et al.* is applied as in claim 1.

In regard to claims **10** and **11** which are dependent on claim 6, MPEP § 2144.05 indicates that in the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a *prima facie* case of obviousness exists. Hamacher *et al.* also disclose that the “... grooves have a width of less than 100 μm ...” (section 3.1, last paragraph on the right column on pg. 129). Therefore, Hamacher *et al.* teach or suggest that the mutual spacing is less than 20 μm .

In regard to claim **12**, Hamacher *et al.* disclose (Fig. 1) a method of producing a position-sensitive detector for measuring charged particles, comprising: providing a

crystalline substrate (*e.g.*, high-purity germanium); forming a blocking layer on the substrate by boron ion implantation; disposing on the blocking layer a metallic layer (*i.e.*, aluminum); removing portions of the metallic layer, the blocking layer and the crystalline substrate such that at least one structured electrode is formed (see “transferring the structure into the semiconductor material by etching” in Fig. 1). The method of Hamacher *et al.* lacks that forming the blocking layer comprises disposing on the substrate an amorphous Germanium layer. Luke *et al.* teach (section 1) to apply a germanium amorphous layer on a p- or n-doped germanium crystalline semiconductor structure, in order to obtain good bipolar blocking contacts. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide an undoped amorphous germanium layer instead of the boron doped layer in the method of Hamacher *et al.*, in order to obtain good bipolar blocking contacts.

Response to Arguments

5. MPEP § 706.07(h)(II) states that the “... submission ... may consist of the arguments in a previously filed appeal brief or reply brief ...”. Applicant’s arguments filed 7 September 2010 have been fully considered but they are not persuasive for the reasons discussed in the 8 July 2010 Board of Patent Appeals and Interferences decision.

6. Applicant's arguments filed 15 December 2010 have been fully considered but they are not persuasive.

Applicant argues that Applicant's invention advantageously provides unexpected results which, as a secondary consideration, demonstrate the non-obviousness of Applicant's invention citing the “Unexpected Results:” section starting on pg. 1131 of

Protić *et al.* (Detection characteristics of Ge detectors with microstructured amorphous Ge contacts, IEEE Transactions on Nuclear Science, Vol. 51, no. 3 (June 2004), pp. 1129-1133). Examiner respectfully disagrees. MPEP § 716.02(c) indicate that expected beneficial results are evidence of obviousness. In this case, Protić *et al.* teach (see “Expected Results:” section starting on pg. 1130) the results were as expected when the detector is used to detect either 60 keV photons or 5.8 MeV α -particles. Thus the “Expected Results:” section starting on pg. 1130 of Protić *et al.* is evidence of obviousness. Protić *et al.* also state (see “Unexpected Results:” section starting on pg. 1130) that “ ... Surprising results were obtained for α -particles impinging on the structured a-Ge contact, ... At the same time the detector was irradiated with 661-keV photons from ^{137}Cs ... ”. Thus Protić *et al.* also teach that the results were surprising when the detector is used in a particular method (*i.e.*, simultaneous irradiation of the detector with both 661 keV photons and 5.8 MeV α -particles). It is noted that the specification as filed does not appear to disclose simultaneous irradiation of the detector with both 661 keV photons and 5.8 MeV α -particles. Further, claims 1, 3-7, and 9-11 are directed to an apparatus and claim 12 is directed to a method of producing an apparatus. Thus the results due to simultaneous irradiation of a detector with both 661 keV photons and 5.8 MeV α -particles are not commensurate in scope with the claimed invention (MPEP § 716.02(d)). In view of the foregoing, when all of the evidence is considered, the totality of the rebuttal evidence of nonobviousness fails to outweigh the evidence of obviousness.

Conclusion

7. MPEP § 706.07(h)(XI)(A)) states that “ ... a Board decision in an application is the “law of the case,” and is thus controlling in that application and any subsequent, related application. ... argument without either amendment of the claims so rejected or the submission of a showing of facts can only result in a final rejection of the claims ... ”.

8. All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (571) 272-2439. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. L./
Examiner, Art Unit 2884

/David P. Porta/
Supervisory Patent Examiner, Art
Unit 2884